

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
2 September 2004 (02.09.2004)

PCT

(10) International Publication Number  
**WO 2004/075328 A3**

(51) International Patent Classification<sup>7</sup>: **H01M 8/04**  
(21) International Application Number:  
PCT/JP2004/000965

(22) International Filing Date: 30 January 2004 (30.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2003-043096 20 February 2003 (20.02.2003) JP  
2003-389253 19 November 2003 (19.11.2003) JP

(71) Applicant (for all designated States except US): **NISSAN MOTOR CO., LTD.** [JP/JP]; 2, Takara-cho, Kanagawa-ku, Yokohama-shi, Kanagawa 2210023 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KAMIHARA, Tet-suya** [JP/JP].

(74) Agents: **MIYOSHI, Hidekazu** et al.; 9th Floor, Toranomon Daiichi Building, 2-3, Toranomon 1-chome, Minato-ku Tokyo 1050001 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

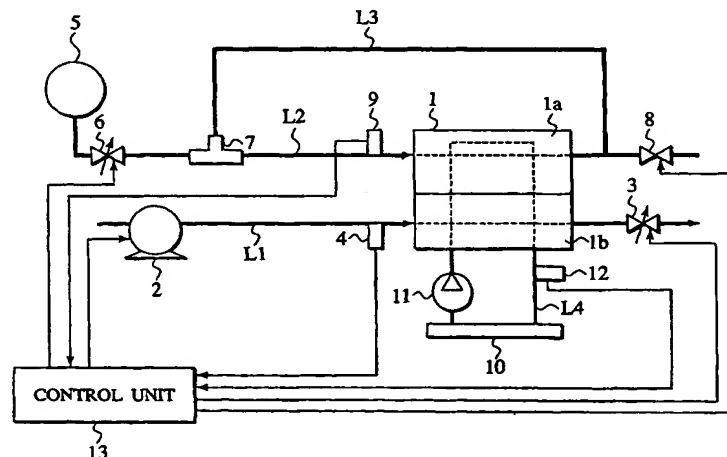
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: **FUEL CELL SYSTEM AND CONTROL METHOD THEREOF**



(57) Abstract: A control unit calculates an integration value resulting from integration of the amount of an impurity other than a fuel gas at a hydrogen electrode, which varies in accordance with a gas pressure at the hydrogen electrode and the temperature of a fuel cell stack, when a hydrogen purge valve is set in a closed state and controls the hydrogen purge valve in an open state when the integration value becomes equal to or greater than a threshold value. The control unit calculates an integration value resulting from integration of a discharge gas flow rate from the hydrogen purge valve, which varies in accordance with the gas pressure at the hydrogen electrode and the temperature of the fuel gas, when the hydrogen purge valve is set in the open state and controls the hydrogen purge valve in the closed state when the integration value becomes equal to or greater than a threshold value. This makes it possible to eliminate impurities culminated in a fuel gas system, to ensure stable power generation over a wide range of operational load, and to minimize the amount of fuel discharge, thereby improving the efficiency of fuel usage.

WO 2004/075328 A3